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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of: **Yasushi KANEKO**

Serial No.: **09/908,731** Group Art Unit: Not yet assigned

Filed: **July 20, 2001** Examiner: Not yet assigned

For: **TRANSFLECTIVE LIQUID CRYSTAL DISPLAY DEVICE**

PRELIMINARY AMENDMENT

Commissioner for Patents
Washington, D.C. 20231

November 5, 2001

Sir:

Prior to examination on the merits, please amend the above-identified application as follows:

IN THE SPECIFICATION

1. Please REPLACE the paragraph beginning at page 8, line 11, with the following rewritten paragraph:

A1

-- Fig. 9 is a plan view showing the transflective layer only of the transflective liquid crystal display device shown in Fig.7; --

2. Please REPLACE the paragraph beginning at page 9, line 10, with the following rewritten paragraph:

A2 cont

-- Fig. 2 is a plan view showing a taransflective layer of the transflective liquid crystal display device together with a planar configuration thereof with first electrodes and second electrodes, wherein the transflective layer is provided with the same hatch as that in Fig. 1 for clarity although

A2 End

Fig. 2 is not a sectional view.--

3. Please REPLACE the paragraph beginning at page 16, line 18, with the following rewritten paragraph:

A3

-- Meanwhile, as shown in Fig. 6, the first polarizing film 11 is disposed such that a transmission axis 11a thereof is at an angle of +45° on the basis of the horizontal axis H - H of the liquid crystal element 20. The twisted retardation film 12 is disposed such that an alignment direction 12a of molecules in the lower part thereof is at an angle of +60° on the basis of the horizontal axis H - H, and an alignment direction 12b of molecules in the upper part thereof is at an angle of -60 °, so that a twist angle Tc thereof becomes -240° clockwise, and if a difference in absolute value between the twist angles is designated by Δt, $\Delta t = |Ts| - |Tc| = 0°$. If a difference in birefringent tendency is designated ΔR, $\Delta R = Rs - Rc = 0.04\mu m$, substantially equivalent in value.

--

4. Please REPLACE the paragraph beginning at page 28, line 24, with the following rewritten paragraph:

A4 cont

-- As shown in Fig. 11, the first polarizing film 11 is disposed such that a transmission axis 11a thereof is at an angle of -55° on the basis of the horizontal axis H - H of the liquid crystal element 21. The twisted retardation film 12 is disposed such that an alignment direction 12 a of molecules in the lower part thereof is at an angle of +55° on the basis of the horizontal axis H - H, and an alignment direction 12b of molecules in the upper part thereof is also at an angle of +55°, so

A4 End

that a twist angle Tc thereof becomes -180° clockwise, and a twist angle ratio Tc / Ts is 0.75. If a difference in birefringent tendency is designated ΔR, ΔR = Rs - Rc = 0.13μm. --

IN THE DRAWINGS:

Attached hereto is a Request for Approval of Drawing Changes. Attached to the Request are copies of Figs. 1, 7 with the changes indicated in red. Upon the approval of the Examiner, Applicant will take the necessary steps to secure a bonded draftsman to effect the approved changes after allowance.

IN THE CLAIMS:

Please AMEND the claim 4 as follows:

A5

4. (Amended) A transflective liquid crystal display device according to claim 3, wherein the nematic liquid crystal is supertwisted nematic liquid crystal having a twist angle in a range of 180 to 260°.

Please AMEND the claim 14 as follows:

A6 Cont

14. (Amended) A transflective liquid crystal display device according to claim 3,

wherein crossover points of the first electrodes and the second electrodes, opposed to each other, inside the liquid crystal element constitute respective pixels, and the transparent portions of the transflective layer are provided at positions corresponding to the respective pixels.

Please AMEND the claim 19 as follows:

19. (Amended) A transflective liquid crystal display device according to claim 3, wherein a protective film formed of a transparent and insulating material is installed between the transflective layer and the first electrodes, on the first substrate of the liquid crystal element.

Please AMEND the claim 20 as follows:

20. (Amended) A trasnflective liquid crystal display device according to claim 14, wherein a protective film formed of a transparent and insulating material is installed between the transflective layer and the first electrodes, on the first substrate of the liquid crystal element.

REMARKS

Applicant has made minor corrections in the specification to put the application in better condition for examination. No new matter has been added by the corrections.

In the event that any fees are due in connection with this paper, please charge our Deposit Account No. 01-2340.

Respectfully submitted,

ARMSTRONG, WESTERMAN, HATTORI,
McLELAND & NAUGHTON, LLP

Ken-Ichi Hattori
Attorney for Applicant
Reg. No. 32,861

Atty. Docket No. **010912**
1725 K Street, N.W., Suite 1000
Washington, DC 20006
Tel: (202) 659-2930
Fax: (202) 887-0357
KH/KUR/ak

Enclosures: Version With Markings To Show Changes Made
Request for Approval of Drawing Changes with Figs. 1, 7

VERSION WITH MARKING TO SHOW CHANGING MADE

IN THE SPECIFICATION

1. Please REPLACE the paragraph beginning at page 8, line 11, with the following rewritten paragraph:

-- Fig. 9 is a plan view showing the transflective ~~reflector~~ layer only of the transflective liquid crystal display device shown in Fig.7;--

2. Please REPLACE the paragraph beginning at page 9, line 10, with the following rewritten paragraph:

-- Fig. 2 is a plan view showing a taransflective ~~reflector~~ layer of the transflective liquid crystal display device together with a planar configuration thereof with first electrodes and second electrodes, wherein the transflective ~~reflector~~ layer is provided with the same hatch as that in Fig. 1 for clarity although Fig. 2 is not a sectional view.--

3. Please REPLACE the paragraph beginning at page 16, line 18, with the following rewritten paragraph:

-- Meanwhile, as shown in Fig. 6, the first polarizing film 11 is disposed such that a transmission axis 11a thereof is at an angle of +45° on the basis of the horizontal axis H - H of the liquid crystal element 20. The twisted retardation film 12 is disposed such that an alignment direction 12a of molecules in the lower part thereof is at an angle of +60° on the basis of the

horizontal axis H - H, and an alignment direction 12b of molecules in the upper part thereof is at an angle of -60 °, so that a twist angle Tc thereof becomes -240° clockwise, and if a difference in absolute value between the twist angles is designated by Δt, $\Delta t = |Ts| - |Tc| = 0°$. If a ~~refractive index~~ difference in birefringent tendency is designated ΔR, $\Delta R = Rs - Rc = 0.04\mu m$, substantially equivalent in value. --

4. Please REPLACE the paragraph beginning at page 28, line 24, with the following rewritten paragraph:

-- As shown in Fig. 11, the first polarizing film 11 is disposed such that a transmission axis 11a thereof is at an angle of -55° on the basis of the horizontal axis H - H of the liquid crystal element 21. The twisted retardation film 12 is disposed such that an alignment direction 12 a of molecules in the lower part thereof is at an angle of +55° on the basis of the horizontal axis H - H, and an alignment direction 12b of molecules in the upper part thereof is also at an angle of +55°, so that a twist angle Tc thereof becomes -180° clockwise, and a twist angle ratio Tc / Ts is 0.75. If a ~~refractive index~~ difference in birefringent tendency is designated ΔR, $\Delta R = Rs - Rc = 0.13\mu m$.

IN THE CLAIMS

Please AMEND the claim 4 as follows:

4. A transflective liquid crystal display device according to claim ~~2~~ 3,

wherein the nematic liquid crystal is supertwisted nematic liquid crystal having a twist angle

in a range of 180 to 260°.

Please AMEND the claim 14 as follows:

14. A transflective liquid crystal display device according to claim ~~2~~ 3,

wherein crossover points of the first electrodes and the second electrodes, opposed to each other, inside the liquid crystal element constitute respective pixels, and the transparent portions of the transflective layer are provided at positions corresponding to the respective pixels.

Please AMEND the claim 19 as follows:

19. A transflective liquid crystal display device according to claim ~~2~~ 3,

wherein a protective film formed of a transparent and insulating material is installed between the transflective layer and the first electrodes, on the first substrate of the liquid crystal element.

Please AMEND the claim 20 as follows:

20. A trasnflective liquid crystal display device according to claim ~~3~~ 14,

wherein a protective film formed of a transparent and insulating material is installed between the transflective layer and the first electrodes, on the first substrate of the liquid crystal element.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: **Yasushi KANEKO**

Serial No.: **09/908,731** Group Art Unit: Not yet assigned

Filed: **July 20, 2001** Examiner: Not yet assigned

For: **TRANSFLECTIVE LIQUID CRYSTAL DISPLAY DEVICE**

REQUEST FOR APPROVAL OF DRAWING CHANGES

Commissioner for Patents
Washington, D.C. 20231

November 5, 2001

Sir:

The Examiner's approval of the drawing correction indicated in red ink on the attached sheet of drawings(Figures 1, 7) is respectfully requested.

In the event any fees required in connection with this please charge our Deposit Account No. 01-2340.

Respectfully submitted,

ARMSTRONG, WESTERMAN, HATTORI,
McLELAND & NAUGHTON, LLP

Ken-Ichi Hattori
Attorney for Applicant
Reg. No. 32,861

Atty. Docket No. **010912**
1725 K Street, N.W., Suite 1000
Washington, DC 20006
Tel: (202) 659-2930
Fax: (202) 887-0357

KH/KUR/ak
Enclosures: Figures 1, 7

FIG. 1

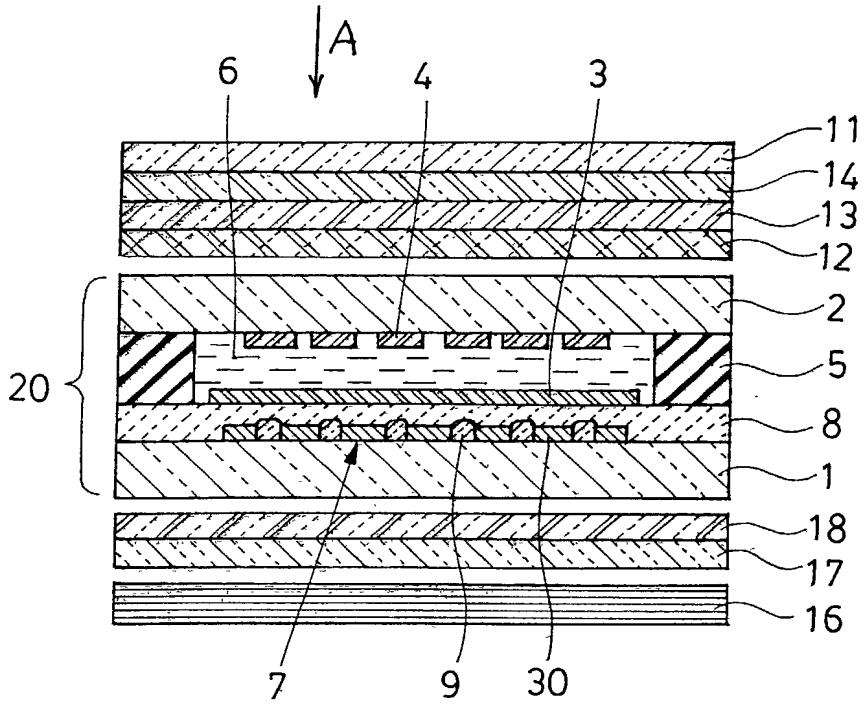

FIG. 2

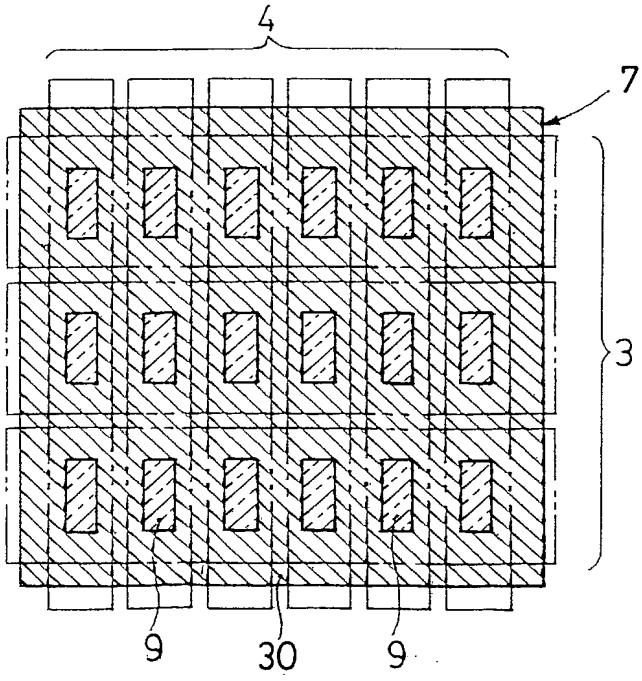

FIG. 7

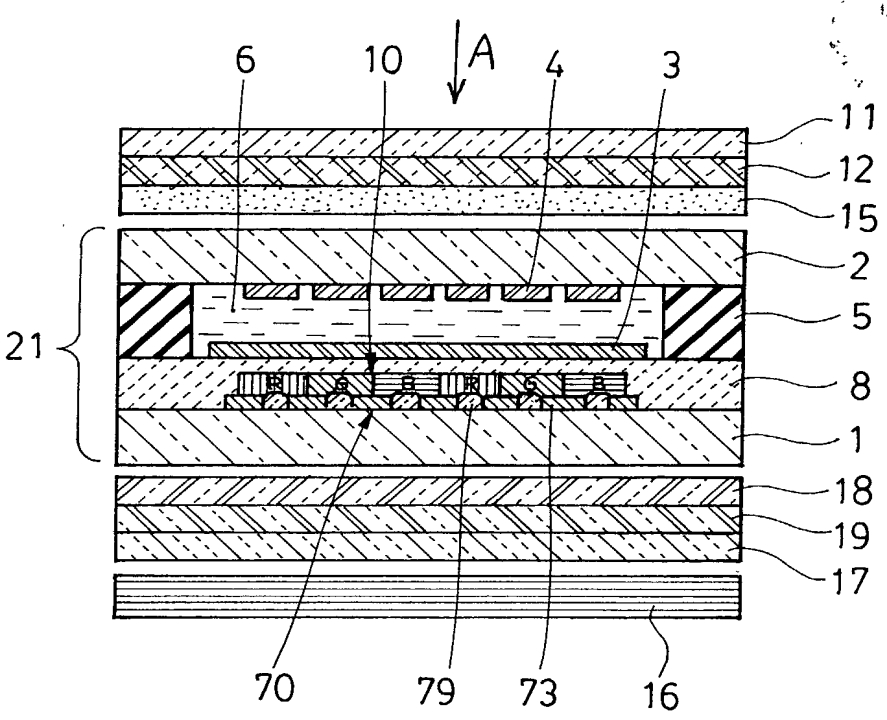

FIG. 8